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## SEQUENCE LISTING

<110> Aventis Pasteur Limited  
Murdin et al.

<120> Chlamydia antigens and corresponding DNA fragments and uses thereof

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<140> PCT/CA99/01147

<141> 1999-12-01

<150> US 60/110,427

<151> 1998-12-01

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&lt;211&gt;2784



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 Tyr Thr Ala Tyr Pro Glu Val Lys Gly Ser Trp Gly Asn Asn Ala Phe  
 760 765 770  
 Asn Met Met Leu Gly Ala Ser Ser His Ser Tyr Pro Glu Tyr Leu His  
 775 780 785  
 30 Cys Phe Asp Thr Tyr Ala Pro Tyr Ile Lys Leu Asn Leu Thr Tyr Ile  
 790 795 800 805  
 Arg Gln Asp Ser Phe Ser Glu Lys Gly Thr Glu Gly Arg Ser Phe Asp  
 810 815 820  
 Asp Ser Asn Leu Phe Asn Leu Ser Leu Pro Ile Gly Val Lys Phe Glu  
 825 830 835  
 40 Lys Phe Ser Asp Cys Asn Asp Phe Ser Tyr Asp Leu Thr Leu Ser Tyr  
 840 845 850  
 Val Pro Asp Leu Ile Arg Asn Asp Pro Lys Cys Thr Thr Ala Leu Val  
 855 860 865  
 Ile Ser Gly Ala Ser Trp Glu Thr Tyr Ala Asn Asn Leu Ala Arg Gln  
 870 875 880 885  
 50 Ala Leu Gln Val Arg Ala Gly Ser His Tyr Ala Phe Ser Pro Met Phe  
 890 895 900  
 Glu Val Leu Gly Gln Phe Val Phe Glu Val Arg Gly Ser Ser Arg Ile  
 905 910 915  
 Tyr Asn Val Asp Leu Gly Gly Lys Phe Gln Phe  
 920 925

<210> 13  
 <211> 885  
 <212> PRT  
 <213> Chlamydia pneumoniae

<400> 13

Gly Thr Tyr Thr Pro Lys Asn Thr Thr Thr Gly Ile Asp Tyr Thr Leu  
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10 Thr Gly Asp Ile Thr Leu Gln Asn Leu Gly Asp Ser Ala Ala Leu Thr  
 20 25 30

Lys Gly Cys Phe Ser Asp Thr Thr Glu Ser Leu Ser Phe Ala Gly Lys  
 35 40 45

Gly Tyr Ser Leu Ser Phe Leu Asn Ile Lys Ser Ser Ala Glu Gly Ala  
 50 55 60

20 Ala Leu Ser Val Thr Thr Asp Lys Asn Leu Ser Leu Thr Gly Phe Ser  
 65 70 75 80

Ser Leu Thr Phe Leu Ala Ala Pro Ser Ser Val Ile Thr Thr Pro Ser  
 85 90 95

Gly Lys Gly Ala Val Lys Cys Gly Gly Asp Leu Thr Phe Asp Asn Asn  
 100 105 110

Gly Thr Ile Leu Phe Lys Gln Asp Tyr Cys Glu Glu Asn Gly Gly Ala  
 115 120 125

30 Ile Ser Thr Lys Asn Leu Ser Leu Lys Asn Ser Thr Gly Ser Ile Ser  
 130 135 140

Phe Glu Gly Asn Lys Ser Ser Ala Thr Gly Lys Lys Gly Gly Ala Ile  
 145 150 155 160

Cys Ala Thr Gly Thr Val Asp Ile Thr Asn Asn Thr Ala Pro Thr Leu  
 165 170 175

40 Phe Ser Asn Asn Ile Ala Glu Ala Ala Gly Gly Ala Ile Asn Ser Thr  
 180 185 190

Gly Asn Cys Thr Ile Thr Gly Asn Thr Ser Leu Val Phe Ser Glu Asn  
 195 200 205

Ser Val Thr Ala Thr Ala Gly Asn Gly Gly Ala Leu Ser Gly Asp Ala  
 210 215 220

50 Asp Val Thr Ile Ser Gly Asn Gln Ser Val Thr Phe Ser Gly Asn Gln  
 225 230 235 240

Ala Val Ala Asn Gly Gly Ala Ile Tyr Ala Lys Lys Leu Thr Leu Ala  
 245 250 255

Ser Gly Gly Gly Gly Gly Asn Pro Phe Ser Asn Asn Ile Val Gln Gly  
 260 265 270



Thr Thr Ala Gly Asn Gly Gly Ala Ile Ser Ile Leu Ala Ala Gly Glu  
 275 280 285  
 Cys Ser Leu Phe Ser Glu Ala Gly Asp His Tyr Leu Asn Gly Asn Ala  
 290 295 300  
 Ile Val Ala Thr Thr Pro Gln Thr Thr Lys Arg Asn Ser Ile Asp Ile  
 305 310 315 320  
 10 Gly Ser Thr Gly Lys Asp His Glu Leu Arg Ala Ile Ser Gly His Ser  
 325 330 335  
 Ile Phe Phe Tyr Asp Pro Ile Thr Ala Asn Thr Ala Ala Asp Ser Thr  
 340 345 350  
 Asp Thr Leu Asn Leu Asn Lys Ala Asp Ala Gly Asn Ser Thr Asp Tyr  
 355 360 365  
 20 Ser Gly Ser Ile Val Phe Ser Gly Glu Lys Leu Ser Glu Asp Glu Ala  
 370 375 380  
 Lys Val Ala Asp Asn Leu Thr Ser Thr Leu Lys Gln Pro Val Thr Leu  
 385 390 395 400  
 Thr Ala Gly Asn Leu Val Leu Lys Arg Gly Val Thr Leu Asp Thr Lys  
 405 410 415  
 Gly Phe Thr Gln Thr Ala Gly Ser Ser Val Ile Met Asp Ala Gly Thr  
 420 425 430  
 30 Thr Leu Lys Ala Ser Thr Glu Glu Val Thr Leu Thr Gly Leu Ser Ile  
 435 440 445  
 Pro Val Asp Ser Leu Gly Glu Gly Lys Lys Val Val Ile Ala Ala Ser  
 450 455 460  
 Ala Ala Ser Lys Asn Val Ala Leu Ser Gly Pro Ile Leu Leu Leu Asp  
 465 470 475 480  
 40 Asn Gln Gly Asn Ala Tyr Glu Asn His Asp Leu Gly Lys Thr Gln Asp  
 485 490 495  
 Phe Ser Phe Val Gln Leu Ser Ala Leu Gly Thr Ala Thr Thr Thr Asp  
 500 505 510  
 Val Pro Ala Val Pro Thr Val Ala Thr Pro Thr His Tyr Gly Tyr Gln  
 515 520 525  
 50 Gly Thr Trp Gly Met Thr Trp Val Asp Asp Thr Ala Ser Thr Pro Lys  
 530 535 540  
 Thr Lys Thr Ala Thr Leu Ala Trp Thr Asn Thr Gly Tyr Leu Pro Asn  
 545 550 555 560  
 Pro Glu Arg Gln Gly Pro Leu Val Pro Asn Ser Leu Trp Gly Ser Phe  
 565 570 575

Ser Asp Ile Gln Ala Ile Gln Gly Val Ile Glu Arg Ser Ala Leu Thr  
 580 585 590  
 Leu Cys Ser Asp Arg Gly Phe Trp Ala Ala Gly Val Ala Asn Phe Leu  
 595 600 605  
 Asp Lys Asp Lys Lys Gly Glu Lys Arg Lys Tyr Arg His Lys Ser Gly  
 610 615 620  
 10 Gly Tyr Ala Ile Gly Gly Ala Ala Gln Thr Cys Ser Glu Asn Leu Ile  
 625 630 635 640  
 Ser Phe Ala Phe Cys Gln Leu Phe Gly Ser Asp Lys Asp Phe Leu Val  
 645 650 655  
 Ala Lys Asn His Thr Asp Thr Tyr Ala Gly Ala Phe Tyr Ile Gln His  
 660 665 670  
 20 Ile Thr Glu Cys Ser Gly Phe Ile Gly Cys Leu Leu Asp Lys Leu Pro  
 675 680 685  
 Gly Ser Trp Ser His Lys Pro Leu Val Leu Glu Gly Gln Leu Ala Tyr  
 690 695 700  
 Ser His Val Ser Asn Asp Leu Lys Thr Lys Tyr Thr Ala Tyr Pro Glu  
 705 710 715 720  
 Val Lys Gly Ser Trp Gly Asn Asn Ala Phe Asn Met Met Leu Gly Ala  
 725 730 735  
 30 Ser Ser His Ser Tyr Pro Glu Tyr Leu His Cys Phe Asp Thr Tyr Ala  
 740 745 750  
 Pro Tyr Ile Lys Leu Asn Leu Thr Tyr Ile Arg Gln Asp Ser Phe Ser  
 755 760 765  
 Glu Lys Gly Thr Glu Gly Arg Ser Phe Asp Asp Ser Asn Leu Phe Asn  
 770 775 780  
 40 Leu Ser Leu Pro Ile Gly Val Lys Phe Glu Lys Phe Ser Asp Cys Asn  
 785 790 795 800  
 Asp Phe Ser Tyr Asp Leu Thr Leu Ser Tyr Val Pro Asp Leu Ile Arg  
 805 810 815  
 Asn Asp Pro Lys Cys Thr Thr Ala Leu Val Ile Ser Gly Ala Ser Trp  
 820 825 830  
 50 Glu Thr Tyr Ala Asn Asn Leu Ala Arg Gln Ala Leu Gln Val Arg Ala  
 835 840 845  
 Gly Ser His Tyr Ala Phe Ser Pro Met Phe Glu Val Leu Gly Gln Phe  
 850 855 860  
 Val Phe Glu Val Arg Gly Ser Ser Arg Ile Tyr Asn Val Asp Leu Gly  
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Gly Lys Phe Gln Phe  
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<210> 14  
<211> 928  
<212> PRT  
<213> Chlamydia pneumoniae

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Met Lys Ser Ser Leu His Trp Phe Leu Ile Ser Ser Ser Leu Ala Leu  
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Pro Leu Ser Leu Asn Phe Ser Ala Phe Ala Ala Val Val Glu Ile Asn  
20 25 30  
Leu Gly Pro Thr Asn Ser Phe Ser Gly Pro Gly Thr Tyr Thr Pro Pro  
35 40 45  
20 Ala Gln Thr Thr Asn Ala Asp Gly Thr Ile Tyr Asn Leu Thr Gly Asp  
50 55 60  
Val Ser Ile Thr Asn Ala Gly Ser Pro Thr Ala Leu Thr Ala Ser Cys  
65 70 75 80  
Phe Lys Glu Thr Thr Gly Asn Leu Ser Phe Gln Gly His Gly Tyr Gln  
85 90 95  
Phe Leu Leu Gln Asn Ile Asp Ala Gly Ala Asn Cys Thr Phe Thr Asn  
100 105 110  
30 Thr Ala Ala Asn Lys Leu Leu Ser Phe Ser Gly Phe Ser Tyr Leu Ser  
115 120 125  
Leu Ile Gln Thr Thr Asn Ala Thr Thr Gly Thr Gly Ala Ile Lys Ser  
130 135 140  
Thr Gly Ala Cys Ser Ile Gln Ser Asn Tyr Ser Cys Tyr Phe Gly Gln  
145 150 155 160  
40 Asn Phe Ser Asn Asp Asn Gly Gly Ala Leu Gln Gly Ser Ser Ile Ser  
165 170 175  
Leu Ser Leu Asn Pro Asn Leu Thr Phe Ala Lys Asn Lys Ala Thr Gln  
180 185 190  
Lys Gly Gly Ala Leu Tyr Ser Thr Gly Gly Ile Thr Ile Asn Asn Thr  
195 200 205  
50 Leu Asn Ser Ala Ser Phe Ser Glu Asn Thr Ala Ala Asn Asn Gly Gly  
210 215 220  
Ala Ile Tyr Thr Glu Ala Ser Ser Phe Ile Ser Ser Asn Lys Ala Ile  
225 230 235 240  
Ser Phe Ile Asn Asn Ser Val Thr Ala Thr Ser Ala Thr Gly Gly Ala  
245 250 255

Ile Tyr Cys Ser Ser Thr Ser Ala Pro Lys Pro Val Leu Thr Leu Ser  
 260 265 270  
 Asp Asn Gly Glu Leu Asn Phe Ile Gly Asn Thr Ala Ile Thr Ser Gly  
 275 280 285  
 Gly Ala Ile Tyr Thr Asp Asn Leu Val Leu Ser Ser Gly Gly Pro Thr  
 290 295 300  
 10 Leu Phe Lys Asn Asn Ser Gly Tyr Asp Thr Ala Ala Pro Leu Gly Gly  
 305 310 315 320  
 Ala Ile Ala Ile Ala Asp Ser Gly Ser Leu Ser Leu Ser Ala Leu Gly  
 325 330 335  
 Gly Asp Ile Thr Phe Glu Gly Asn Thr Val Val Lys Gly Ala Ser Ser  
 340 345 350  
 20 Ser Gln Thr Thr Thr Arg Asn Ser Ile Asn Ile Gly Asn Thr Asn Ala  
 355 360 365  
 Lys Ile Val Gln Leu Arg Ala Ser Gln Gly Asn Thr Ile Tyr Phe Tyr  
 370 375 380  
 Asp Pro Ile Thr Thr Ser Ile Thr Ala Ala Leu Ser Asp Ala Leu Asn  
 385 390 395 400  
 Leu Asn Gly Pro Asp Leu Ala Gly Asn Pro Ala Tyr Gln Gly Thr Ile  
 405 410 415  
 30 Val Phe Ser Gly Glu Lys Leu Ser Glu Ala Glu Ala Ala Glu Ala Asp  
 420 425 430  
 Asn Leu Lys Ser Thr Ile Gln Gln Pro Leu Thr Leu Ala Gly Gly Gln  
 435 440 445  
 Leu Ser Leu Lys Ser Gly Val Thr Leu Val Ala Lys Ser Phe Ser Gln  
 450 455 460  
 40 Ser Pro Gly Ser Thr Leu Leu Met Asp Ala Gly Thr Thr Leu Glu Thr  
 465 470 475 480  
 Ala Asp Gly Ile Thr Ile Asn Asn Leu Val Leu Asn Val Asp Ser Leu  
 485 490 495  
 Lys Glu Thr Lys Lys Gly Thr Leu Lys Ala Thr Gln Ala Ser Gln Thr  
 500 505 510  
 50 Val Thr Leu Ser Gly Ser Leu Ser Leu Val Asp Pro Ser Gly Asn Val  
 515 520 525  
 Tyr Glu Asp Val Ser Trp Asn Asn Pro Gln Val Phe Ser Cys Leu Thr  
 530 535 540  
 Leu Thr Ala Asp Asp Pro Ala Asn Ile His Ile Thr Asp Leu Ala Ala  
 545 550 555 560

	Asp	Pro	Leu	Glu	Lys	Asn	Pro	Ile	His	Trp	Gly	Tyr	Gln	Gly	Asn	Trp	
					565					570					575		
	Ala	Leu	Ser	Trp	Gln	Glu	Asp	Thr	Ala	Thr	Lys	Ser	Lys	Ala	Ala	Thr	
				580					585					590			
	Leu	Thr	Trp	Thr	Lys	Thr	Gly	Tyr	Asn	Pro	Asn	Pro	Glu	Arg	Arg	Gly	
			595					600					605				
10	Thr	Leu	Val	Ala	Asn	Thr	Leu	Trp	Gly	Ser	Phe	Val	Asp	Val	Arg	Ser	
		610					615					620					
	Ile	Gln	Gln	Leu	Val	Ala	Thr	Lys	Val	Arg	Gln	Ser	Gln	Glu	Thr	Arg	
	625					630					635					640	
	Gly	Ile	Trp	Cys	Glu	Gly	Ile	Ser	Asn	Phe	Phe	His	Lys	Asp	Ser	Thr	
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20	Lys	Ile	Asn	Lys	Gly	Phe	Arg	His	Ile	Ser	Ala	Gly	Tyr	Val	Val	Gly	
				660					665					670			
	Ala	Thr	Thr	Thr	Leu	Ala	Ser	Asp	Asn	Leu	Ile	Thr	Ala	Ala	Phe	Cys	
				675				680					685				
	Gln	Leu	Phe	Gly	Lys	Asp	Arg	Asp	His	Phe	Ile	Asn	Lys	Asn	Arg	Ala	
		690					695					700					
30	Ser	Ala	Tyr	Ala	Ala	Ser	Leu	His	Leu	Gln	His	Leu	Ala	Thr	Leu	Ser	
	705					710					715				720		
	Ser	Pro	Ser	Leu	Leu	Arg	Tyr	Leu	Pro	Gly	Ser	Glu	Ser	Glu	Gln	Pro	
				725						730					735		
	Val	Leu	Phe	Asp	Ala	Gln	Ile	Ser	Tyr	Ile	Tyr	Ser	Lys	Asn	Thr	Met	
				740					745					750			
	Lys	Thr	Tyr	Tyr	Thr	Gln	Ala	Pro	Lys	Gly	Glu	Ser	Ser	Trp	Tyr	Asn	
			755					760					765				
40	Asp	Gly	Cys	Ala	Leu	Glu	Leu	Ala	Ser	Ser	Leu	Pro	His	Thr	Ala	Leu	
		770					775					780					
	Ser	His	Glu	Gly	Leu	Phe	His	Ala	Tyr	Phe	Pro	Phe	Ile	Lys	Val	Glu	
	785					790					795					800	
	Ala	Ser	Tyr	Ile	His	Gln	Asp	Ser	Phe	Lys	Glu	Arg	Asn	Thr	Thr	Leu	
				805						810					815		
50	Val	Arg	Ser	Phe	Asp	Ser	Gly	Asp	Leu	Ile	Asn	Val	Ser	Val	Pro	Ile	
				820					825					830			
	Gly	Ile	Thr	Phe	Glu	Arg	Phe	Ser	Arg	Asn	Glu	Arg	Ala	Ser	Tyr	Glu	
			835					840					845				
	Ala	Thr	Val	Ile	Tyr	Val	Ala	Asp	Val	Tyr	Arg	Lys	Asn	Pro	Asp	Cys	
		850					855					860					

Thr Thr Ala Leu Leu Ile Asn Asn Thr Ser Trp Lys Thr Thr Gly Thr  
865 870 875 880

Asn Leu Ser Arg Gln Ala Gly Ile Gly Arg Ala Gly Ile Phe Tyr Ala  
885 890 895

Phe Ser Pro Asn Leu Glu Val Thr Ser Asn Leu Ser Met Glu Ile Arg  
900 905 910

10 Gly Ser Ser Arg Ser Tyr Asn Ala Asp Leu Gly Gly Lys Phe Gln Phe  
915 920 925

<210> 15

<211> 930

<212> PRT

<213> Chlamydia pneumoniae

<400> 15

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Pro Ile Leu Leu Ser Ile Ala Thr Tyr Gly Ala Asp Ala Ser Leu Ser  
20 25 30

Pro Thr Asp Ser Phe Asp Gly Ala Gly Gly Ser Thr Phe Thr Pro Lys  
35 40 45

30 Ser Thr Ala Asp Ala Asn Gly Thr Asn Tyr Val Leu Ser Gly Asn Val  
50 55 60

Tyr Ile Asn Asp Ala Gly Lys Gly Thr Ala Leu Thr Gly Cys Cys Phe  
65 70 75 80

Thr Glu Thr Thr Gly Asp Leu Thr Phe Thr Gly Lys Gly Tyr Ser Phe  
85 90 95

Ser Phe Asn Thr Val Asp Ala Gly Ser Asn Ala Gly Ala Ala Ala Ser  
100 105 110

40 Thr Thr Ala Asp Lys Ala Leu Ile Phe Thr Gly Phe Ser Asn Leu Ser  
115 120 125

Phe Ile Ala Ala Pro Gly Thr Thr Val Ala Ser Gly Lys Ser Thr Leu  
130 135 140

Ser Ser Ala Gly Ala Leu Asn Leu Thr Asp Asn Gly Thr Ile Leu Phe  
145 150 155 160

50 Ser Gln Asn Val Ser Asn Glu Ala Asn Asn Asn Gly Gly Ala Ile Thr  
165 170 175

Thr Lys Thr Leu Ser Ile Ser Gly Asn Thr Ser Ser Ile Thr Phe Thr  
180 185 190

Ser Asn Ser Ala Lys Lys Leu Gly Gly Ala Ile Tyr Ser Ser Ala Ala  
195 200 205

	Ala	Ser	Ile	Ser	Gly	Asn	Thr	Gly	Gln	Leu	Val	Phe	Met	Asn	Asn	Lys	
	210						215					220					
	Gly	Glu	Thr	Gly	Gly	Gly	Ala	Leu	Gly	Phe	Glu	Ala	Ser	Ser	Ser	Ile	
	225					230					235					240	
	Thr	Gln	Asn	Ser	Ser	Leu	Phe	Phe	Ser	Gly	Asn	Thr	Ala	Thr	Asp	Ala	
					245					250					255		
10	Ala	Gly	Lys	Gly	Gly	Ala	Ile	Tyr	Cys	Glu	Lys	Thr	Gly	Glu	Thr	Pro	
				260					265					270			
	Thr	Leu	Thr	Ile	Ser	Gly	Asn	Lys	Ser	Leu	Thr	Phe	Ala	Glu	Asn	Ser	
			275					280					285				
	Ser	Val	Thr	Gln	Gly	Gly	Ala	Ile	Cys	Ala	His	Gly	Leu	Asp	Leu	Ser	
		290					295					300					
20	Ala	Ala	Gly	Pro	Thr	Leu	Phe	Ser	Asn	Asn	Arg	Cys	Gly	Asn	Thr	Ala	
	305					310					315					320	
	Ala	Gly	Lys	Gly	Gly	Ala	Ile	Ala	Ile	Ala	Asp	Ser	Gly	Ser	Leu	Ser	
					325					330					335		
	Leu	Ser	Ala	Asn	Gln	Gly	Asp	Ile	Thr	Phe	Leu	Gly	Asn	Thr	Leu	Thr	
				340					345					350			
	Ser	Thr	Ser	Ala	Pro	Thr	Ser	Thr	Arg	Asn	Ala	Ile	Tyr	Leu	Gly	Ser	
			355					360					365				
30	Ser	Ala	Lys	Ile	Thr	Asn	Leu	Arg	Ala	Ala	Gln	Gly	Gln	Ser	Ile	Tyr	
		370					375					380					
	Phe	Tyr	Asp	Pro	Ile	Ala	Ser	Asn	Thr	Thr	Gly	Ala	Ser	Asp	Val	Leu	
	385					390					395					400	
	Thr	Ile	Asn	Gln	Pro	Asp	Ser	Asn	Ser	Pro	Leu	Asp	Tyr	Ser	Gly	Thr	
				405						410					415		
40	Ile	Val	Phe	Ser	Gly	Glu	Lys	Leu	Ser	Ala	Asp	Glu	Ala	Lys	Ala	Ala	
				420					425					430			
	Asp	Asn	Phe	Thr	Ser	Ile	Leu	Lys	Gln	Pro	Leu	Ala	Leu	Ala	Ser	Gly	
		435						440					445				
	Thr	Leu	Ala	Leu	Lys	Gly	Asn	Val	Glu	Leu	Asp	Val	Asn	Gly	Phe	Thr	
		450					455					460					
	Gln	Thr	Glu	Gly	Ser	Thr	Leu	Leu	Met	Gln	Pro	Gly	Thr	Lys	Leu	Lys	
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	Ala	Asp	Thr	Glu	Ala	Ile	Ser	Leu	Thr	Lys	Leu	Val	Val	Asp	Leu	Ser	
					485					490					495		
	Ala	Leu	Glu	Gly	Asn	Lys	Ser	Val	Ser	Ile	Glu	Thr	Ala	Gly	Ala	Asn	
				500					505					510			

	Lys	Thr	Ile	Thr	Leu	Thr	Ser	Pro	Leu	Val	Phe	Gln	Asp	Ser	Ser	Gly	
			515					520					525				
	Asn	Phe	Tyr	Glu	Ser	His	Thr	Ile	Asn	Gln	Ala	Phe	Thr	Gln	Pro	Leu	
	530						535					540					
	Val	Val	Phe	Thr	Ala	Ala	Thr	Ala	Ala	Ser	Asp	Ile	Tyr	Ile	Asp	Ala	
	545					550					555					560	
10	Leu	Leu	Thr	Ser	Pro	Val	Gln	Thr	Pro	Glu	Pro	His	Tyr	Gly	Tyr	Gln	
					565					570					575		
	Gly	His	Trp	Glu	Ala	Thr	Trp	Ala	Asp	Thr	Ser	Thr	Ala	Lys	Ser	Gly	
				580					585					590			
	Thr	Met	Thr	Trp	Val	Thr	Thr	Gly	Tyr	Asn	Pro	Asn	Pro	Glu	Arg	Arg	
				595				600					605				
20	Ala	Ser	Val	Val	Pro	Asp	Ser	Leu	Trp	Ala	Ser	Phe	Thr	Asp	Ile	Arg	
	610						615					620					
	Thr	Leu	Gln	Gln	Ile	Met	Thr	Ser	Gln	Ala	Asn	Ser	Ile	Tyr	Gln	Gln	
	625					630					635					640	
	Arg	Gly	Leu	Trp	Ala	Ser	Gly	Thr	Ala	Asn	Phe	Phe	His	Lys	Asp	Lys	
					645					650					655		
	Ser	Gly	Thr	Asn	Gln	Ala	Phe	Arg	His	Lys	Ser	Tyr	Gly	Tyr	Ile	Val	
				660					665					670			
30	Gly	Gly	Ser	Ala	Glu	Asp	Phe	Ser	Glu	Asn	Ile	Phe	Ser	Val	Ala	Phe	
			675					680					685				
	Cys	Gln	Leu	Phe	Gly	Lys	Asp	Lys	Asp	Leu	Phe	Ile	Val	Glu	Asn	Thr	
	690						695					700					
	Ser	His	Asn	Tyr	Leu	Ala	Ser	Leu	Tyr	Leu	Gln	His	Arg	Ala	Phe	Leu	
	705					710					715					720	
40	Gly	Gly	Leu	Pro	Met	Pro	Ser	Phe	Gly	Ser	Ile	Thr	Asp	Met	Leu	Lys	
					725					730					735		
	Asp	Ile	Pro	Leu	Ile	Leu	Asn	Ala	Gln	Leu	Ser	Tyr	Ser	Tyr	Thr	Lys	
				740					745					750			
	Asn	Asp	Met	Asp	Thr	Arg	Tyr	Thr	Ser	Tyr	Pro	Glu	Ala	Gln	Gly	Ser	
			755					760					765				
50	Trp	Thr	Asn	Asn	Ser	Gly	Ala	Leu	Glu	Leu	Gly	Gly	Ser	Leu	Ala	Leu	
	770						775					780					
	Tyr	Leu	Pro	Lys	Glu	Ala	Pro	Phe	Phe	Gln	Gly	Tyr	Phe	Pro	Phe	Leu	
	785					790					795					800	
	Lys	Phe	Gln	Ala	Val	Tyr	Ser	Arg	Gln	Gln	Asn	Phe	Lys	Glu	Ser	Gly	
					805					810					815		



Ala Glu Ala Arg Ala Phe Asp Asp Gly Asp Leu Val Asn Cys Ser Ile  
820 825 830

Pro Val Gly Ile Arg Leu Glu Lys Ile Ser Glu Asp Glu Lys Asn Asn  
835 840 845

Phe Glu Ile Ser Leu Ala Tyr Ile Gly Asp Val Tyr Arg Lys Asn Pro  
850 855 860

10 Arg Ser Arg Thr Ser Leu Met Val Ser Gly Ala Ser Trp Thr Ser Leu  
865 870 875 880

Cys Lys Asn Leu Ala Arg Gln Ala Phe Leu Ala Ser Ala Gly Ser His  
885 890 895

Leu Thr Leu Ser Pro His Val Glu Leu Ser Gly Glu Ala Ala Tyr Glu  
900 905 910

20 Leu Arg Gly Ser Ala His Ile Tyr Asn Val Asp Cys Gly Leu Arg Tyr  
915 920 925

Ser Phe  
930

<210> 16

<211> 293

<212> PRT

<213> Chlamydia pneumoniae

30

<400> 16

Met Leu Ser Ser Leu Ile Arg Asp Ser Phe Pro Leu Leu Ile Leu Leu  
1 5 10 15

Pro Thr Phe Leu Ala Ala Leu Gly Ala Ser Val Ala Gly Gly Val Met  
20 25 30

Gly Thr Tyr Ile Val Val Lys Arg Ile Val Ser Ile Ser Gly Ser Ile  
35 40 45

40

Ser His Ala Ile Leu Gly Gly Ile Gly Leu Thr Leu Trp Ile Gln Tyr  
50 55 60

Lys Leu His Leu Ser Phe Phe Pro Met Tyr Gly Ala Ile Val Gly Ala  
65 70 75 80

Ile Phe Leu Ala Leu Cys Ile Gly Lys Ile His Leu Lys Tyr Gln Glu  
85 90 95

50

Arg Glu Asp Ser Leu Ile Ala Met Ile Trp Ser Val Gly Met Ala Ile  
100 105 110

Gly Ile Ile Phe Ile Ser Arg Leu Pro Thr Phe Asn Gly Glu Leu Ile  
115 120 125

Asn Phe Leu Phe Gly Asn Ile Leu Trp Val Thr Pro Ser Asp Leu Tyr  
130 135 140

Ser Leu Gly Ile Phe Asp Leu Leu Val Leu Gly Ile Val Val Leu Cys  
145 150 155 160

His Thr Arg Phe Leu Ala Leu Cys Phe Asp Glu Arg Tyr Thr Ala Leu  
165 170 175

Asn His Cys Ser Val Gln Leu Trp Tyr Phe Leu Leu Leu Val Leu Thr  
180 185 190

10 Ala Ile Thr Ile Val Met Leu Ile Tyr Val Met Gly Thr Ile Leu Met  
195 200 205

Leu Ser Met Leu Val Leu Pro Val Ala Ile Ala Cys Arg Phe Ser Tyr  
210 215 220

Lys Met Thr Arg Ile Met Phe Ile Ser Val Leu Leu Asn Ile Leu Cys  
225 230 235 240

20 Ser Phe Ser Gly Ile Cys Ile Ala Tyr Cys Leu Asp Phe Pro Val Gly  
245 250 255

Pro Thr Ile Ser Leu Leu Met Gly Leu Gly Tyr Thr Ala Ser Leu Cys  
260 265 270

Val Lys Lys Arg Tyr Asn Pro Ser Thr Pro Ser Pro Val Ser Pro Glu  
275 280 285

Ile Asn Thr Asn Val  
290

30

<210> 17

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> T-cell epitope

40

<400> 17

Arg Leu Leu Asn Leu Ser Ile Pro Val

5

<210> 18

<211> 15

<212> PRT

<213> Artificial Sequence

50

<220>

<223> B-cell epitope

<400> 18

His Lys Thr Gly Asp Glu Asn Arg Lys Gly Phe Arg His Thr Ser

5

10

15

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<210> 19
<211> 7
<212> PRT
<213> Artificial Sequence
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<220>  
<223> T-cell epitope

10 Val Leu Gly Gln Phe Val Phe  
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<210> 20
<211> 16
<212> PRT
<213> Artificial Sequence
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20 <223> B-cell epitope

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<400> 20
Asp Lys Asp Lys Lys Gly Glu Lys Arg Lys Tyr Arg His Lys Ser Gly
          5              10              15
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1	<210>	21
2	<211>	9
3	<212>	PRT
30	<213>	Artificial Sequence

<220>  
<223> T-cell epitope

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<400> 21
Thr Leu Trp Gly Ser Phe Val Asp Val
          5
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40  <210> 22
    <211> 14
    <212> PRT
    <213> Artificial Sequence
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<211> 9
<212> PRT
<213> Artificial Sequence
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&lt;220&gt;

&lt;223&gt; T-cell epitope

&lt;400&gt; 23

Lys Leu Leu Ile Ser Ser Thr Leu Val

5

&lt;210&gt; 24

10 &lt;211&gt; 11

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; B-cell epitope

&lt;400&gt; 24

Glu Lys Ile Ser Glu Asp Glu Lys Asn Asn Phe

5

10

20

&lt;210&gt; 25

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; B-cell epitope

&lt;400&gt; 25

Tyr Arg Lys Asn Pro Arg Ser Arg Thr

5

30

&lt;210&gt; 26

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

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&lt;220&gt;

&lt;223&gt; T-cell epitope

&lt;400&gt; 26

Phe Leu Phe Gly Asn Ile Leu Trp Val

5

&lt;210&gt; 27

&lt;211&gt; 10

50 &lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; B-cell epitope

&lt;400&gt; 27

His Leu Lys Tyr Gln Glu Arg Glu Asp Ser

5

10